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(54) Title: AUTHORIZED DISTRIBUTION OF DIGITAL CONTENT OVER MOBILE NETWORKS

(57) Abstract: The present invention discloses a method and apparatus for authorized distribution of digital content amongst a plurality of mobile devices, under the mobile service provider's control. A mobile subscriber requests for services (digital content/applications) to a mobile service provider. The mobile service provider then sends a download descriptor to the mobile device through an SMS message. The download descriptor includes a link to the actual digital content hosted by a content provider. The user is then able to read, delete, forward the download descriptor to other mobile users or download the content on his/her mobile device at any point of time. The user also gets notified about any changes such as a new service or a version upgrade according to his/her preferences. The invention enables the mobile service provider to implement payment, licensing, copyright and other digital rights management policies while enabling a user to distribute the content to other users.

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AUTHORIZED DISTRIBUTION OF DIGITAL CONTENT OVER MOBILE NETWORKS

BACKGROUND

The present invention relates to distribution of digital content over mobile devices. In particular, this invention relates to distribution and management of digital data and applications over SIM-enabled mobile devices.

Over the past few years, the exchange of digital content over different types of networks in general, and the Internet in particular, has increased enormously. One of the prime reasons for this stupendous increase is the evolution of the Internet as an efficient medium of distribution and management of digital content.

Coupled with the increase in distribution of the digital content is the problem of unauthorized access to the digital content. The ideal way of distribution of digital content is as follows: the digital content is directly sourced from a network (such as a server on the Internet), and is distributed to authorized users through a user device (such as a desktop PC). However, with the ever-increasing amount of digital content distribution over a network, the chances of "unprotected" digital content on the network being easily and freely copied, altered or distributed in large numbers, is turning out to be a grave reality. Needless to say, such unauthorized use of digital content is a big deterrent to the providers of digital content from providing the digital content.

The issue of unauthorized distribution of digital content over the Internet is addressed by proper licensing of the contents through Digital Rights Management (DRM). Digital Rights Management relates to techniques, processes, procedures and algorithms that establish a secure computing environment, and provide a secure infrastructure for the preparation, transmission, and prevention of misuse and/or consumption of protected digital contents.

With rapid developments in wireless technologies and with the onset of technically superior mobile devices and networks, distribution of digital content, which was predominantly being carried out only on the Internet, is now being done

over mobile networks as well. The new-generation mobile devices include mobile phones, Personal Digital Assistant (PDA), Laptops, etc. that are capable of handling digital data, such as ring tones, images, etc., and digital applications such as calendar, games, and the like. The new-generation mobile networks have a high data-transfer rate and, at the same time, support greater number of mobile users at any point of time.

The transfer of digital content over the mobile devices involves data transfer between a content provider and an end user. The content provider provides the digital content (data and applications) to the users through a mobile service provider. Alternatively, the mobile service provider may itself host and provide the content to the subscriber.

The present mobile devices also have the capability to distribute (or forward) the contents to other mobile devices. This allows a mobile device user to potentially distribute "unprotected" downloaded content to numerous other mobile device users. This means that unprotected content, such as games, logos, pictures, music, ring tones etc, can be forwarded to other users if there is no protection for preventing such distribution. Such uncontrolled distribution is not desirable to the content provider (of the "unprotected" content). In order to explain this point more clearly, consider an example of a service provider who provides mobile ring tones for some payments by the user. If the ring tone is "unprotected", then the same may be forwarded to numerous other mobile users who have devices capable of receiving the content. For example, MP3 songs can be circulated and shared with users (mobile subscribers) who own devices with embedded of MP3 players. This is economically undesirable for the content provider. Further, such distribution may also lead to problems of licensing and copyright violations. Indeed, the content providers are wary of such problems and these problems are deterring content providers to host "rich" content for mobile devices without taking necessary steps towards protecting the content.

In order to address the above problems, content providers rely on Mobile Digital Rights Management (MDRM) techniques that protect content, and allow only authorized usage of the content. Mobile DRM provides a secure infrastructure for the preparation, transmission, and prevention of misuse of protected digital contents.

Thus, content is available to a user only through the content provider (or the mobile service provider as the case may be). Thus, a user cannot forward the "protected" content to other users. However, in such cases, the knowledge about the availability of content cannot be passed on from one mobile user to another. This, in turn,
5 reduces the number of possible users who may actually pay for the content being hosted by the content provider, but may not know about the availability of such content. This situation is also undesirable for the content providers. It is desirable for content providers that the users also distribute the URL or links of digital content to other users, so that each subsequent user who gets the distributed link may pay
10 appropriately to the content provider for using the content. The concept of super-distribution may be used to achieve the above-mentioned objective.

Super-distribution is the process of distribution of digital content virally (over networks such as the Internet). Super-distribution enables the end-users to share such content with other users thereby increasing the distribution and sales of the
15 content. The concept of super distribution is applicable for any type of digital media, software or applications. This concept is currently being used on the Internet with products like Windows® Media Rights Manager (a product by Microsoft Corp., Redmond, WA, USA), which allow transfer of digital content while taking care of issues of licensing and copyright protection. The product also enables the setting up
20 of a DRM system as per user preferences.

The application of the concept of super-distribution over mobile networks is highly desirable (especially for the content providers), as this enables sharing of content, which, in turn, increases sales and distribution of the content. The existing state of technology (for mobile networks) works as follows: a user requests for
25 download of digital content from his/her mobile service provider. Downloadable digital content is hosted by a content provider, which is in contact with a mobile service provider. Upon receiving the request, the user is prompted to pay for the content that he/she intends to download. After receiving the necessary payments, the mobile service provider forwards the content (which may have digital rights
30 associated with it) to the user. The user is then able to download the requested content on his/her mobile device.

Another existing state of technology is WAP push technology in which a mobile service provider, in conjunction with a content provider, may send a user a link to content provider. This may be sent according to preferences set by the user. In this technology, a link can be delivered to a user but the link cannot be forwarded
5 to any other mobile device. Thus, the aim of greater circulation of content through the concept of super-distribution is not achieved.

An example of a technology used for distribution on mobile networks is Universal Distribution with Access Control - Media Base (UDAC-MB), which has been developed jointly by Sanyo Electric Co., Ltd. (Japan), Hitachi, Ltd. (Japan) and
10 Fujitsu Ltd. (Japan) supports the copying content protection technology to realize legal copying and legal playback.

As is apparent from the above discussion, there are certain limitations in the existing state of technology. The existing state of technology does not support user-to-user authorized forwarding and distribution of digital content over mobile
15 networks. Also, in existing technologies, the communication between the server and the user (client) is restricted to a particular type of mobile device (of the user). For instance, content developed (by content provider) for mobile handset type A may not be usable on mobile handsets of type B. Thus, the communication has to be customized for different types of mobile devices.

Another desirable feature, which is not provided in existing systems, is that of
20 notification to the mobile user, by the service provider, regarding the change of content. The presence of such functionality will help the user to keep updating the features on the mobile device. Also, the existing state of technology needs to further secure the interests of content providers by minimizing the unauthorized use of
25 digital content. The content provider's interest, in terms of returns (payments, licensing fees, etc.) for the provision of content, must be safeguarded against any unauthorized access.

Hence, there is a need for a system for data distribution over a mobile network that allows for authorized forwarding and distribution of URL or link from one
30 mobile user to another. This system must also be able to safeguard the rights of the content providers during the process of forwarding and downloading of the content.

Further, a platform independent communication system is required. It is also desirable that a user of a mobile device has an easy and ready access to the downloadable digital content of his/her interest. Additionally, there is a need for an updating feature that will periodically provide information to the mobile users
5 regarding the updates in the contents available for downloading.

SUMMARY

The present invention is directed towards distribution and management of digital data and applications over SIM-enabled mobile devices.

10 An object of the invention is to provide a system and method for a mobile user to obtain the links for download of digital content through a mobile service provider and store the links in a virtual vault in a protocol-independent way.

Another object of the invention is to provide a system and method for downloading the contents using the links provided through a download descriptor.

15 Another object of the invention is to allow the forwarding of links by one mobile user to another mobile user through a download server.

Yet another object of the invention is to provide licensing and copyright options for download of contents through the download server in order to prevent piracy.

20 Yet another object of the invention is to provide payment options for download of contents through the download server in order to enable the mobile service provider to monetize content.

A further object of the invention is to update a mobile user regarding updates in the content provided by a content provider.

25 A further object of the invention is to enable the download server to seamlessly update the virtual vault, in case of version change (change in available content) or withdrawal of a service.

In order to attain the above-mentioned objectives, the first step is for the mobile user to send a request for services (such as download of digital content) to a mobile service provider. The mobile service provider also checks for the preferences of the mobile user. Further, the mobile service provider sends a download descriptor
5 to the mobile user. The download descriptor contains the details regarding the content that can be downloaded.

The download descriptor is sent to the mobile user using messaging services such as SMS. The download descriptor is stored on the SIM database using a virtual vault on the mobile device in a protocol independent way. The virtual vault is created
10 on the SIM card of the mobile device by the SIM application toolkit. The virtual vault is the "personal repository of descriptors of the applications downloaded". The download descriptor can be invoked at any point of time for the actual download, reading of the content, forwarding the descriptor to other mobile users and deletion of the same.

15 Downloading of the content is allowed only through licensing and payment. The download server prompts the subscriber for the payment of the requested content, which also handles the associated licensing fee for the content. The download server intermediates in the payment and licensing as per the agreement between the mobile service provider and the content provider.

20 The invocation of forwarding leads to a message from mobile user to the download server. The message indicates the identification number of the addressed mobile user and the download information contained in the download descriptor. The download server checks the preferences of the addressed mobile user and allows forwarding if the preferences allow for such forwarding. There is also a modification
25 prompt that notifies the mobile user when the download descriptor is changed. Also, the mobile user is notified by the mobile service provider regarding the changes in content provided by the content provider. As a result, the download descriptor stored in SIM database using virtual vault gets updated.

BRIEF DESCRIPTION OF THE DRAWINGS

The preferred embodiments of the invention will hereinafter be described in conjunction with the appended drawings provided to illustrate and not to limit the invention, wherein like designations denote like elements, and in which:

FIG. 1 shows a block schematic of a system for distribution and management
5 of digital content over mobile devices in accordance with a preferred embodiment of the present invention;

FIG. 2 illustrates a flow chart depicting the method of distribution and management of digital content over mobile devices in accordance with a preferred embodiment of the present invention;

10 FIG. 3 illustrates the components of mobile service provider in greater detail in accordance with a preferred embodiment of the present invention;

FIG. 4 illustrates the components of mobile device in greater detail in accordance with a preferred embodiment of the present invention, and

15 FIG. 5 is a block diagram that illustrates the licensing and payment provisions of the system in accordance with a preferred embodiment of the present invention.

DESCRIPTION OF PREFERRED EMBODIMENTS

The present invention discloses a system and method for distribution and management of digital content (includes any digital data and applications), which is being distributed amongst SIM-enabled mobile devices over a mobile network. SIM
20 is an acronym for Subscriber Identification Module. SIM cards are small cards that fit inside phones based on GSM technology. When in use, these cards contain personalized information about user and the corresponding mobile service provider. This information includes user's telephone number, phonebook, etc. Any device that uses a SIM card to connect to a mobile network is referred to as a SIM-enabled
25 device. SIM-enabled mobile devices include laptops, Personal Digital Assistants (PDAs), mobile phones, smart phones etc. The present invention enables the implementation of Digital Rights Management (DRM) on the distributed digital content thereby minimizing the unauthorized access to the digital content. Moreover, the present invention enables mobile users to easily and readily access

downloadable contents of their choice. The present invention also enables immediate relevant notifications to mobile users as and when there is an update in the content being provided to the users.

FIG. 1 shows a block schematic of a system for distribution and management of digital data and applications over SIM-enabled mobile devices in accordance with a preferred embodiment of the present invention. The setup shows a mobile service provider 102, a plurality of mobile devices 104, 106, 108 that are used by mobile users and a plurality of content providers 110, 112, 114. Content providers 110, 112 and 114 submit content to mobile service provider 102 that can be downloaded to mobile devices 104, 106 and 108. For instance, content provider 110 may provide MP3 songs in the form of digital content. Mobile users can download the MP3 songs to their respective mobile devices through mobile service provider 102. Alternatively, mobile service provider 102 may provide the content directly, and in such cases there is no need for content providers 110, 112 and 114 in the system.

In order to enable the SIM-enabled mobile devices to use (or execute) the downloaded digital data and applications, the SIM-enabled mobile device is provided with a SIM application toolkit. In a preferred embodiment, this SIM application toolkit is "pre-burnt" on permanent memory (ROM) of the SIM of the mobile device before it can be used by the mobile user for download of digital content. GSM 11.14 specification of the SIM Application Toolkit for the Subscriber Identity is well known in the art, and is described in greater detail in conjunction with FIG. 4.

FIG. 2 illustrates a flow chart depicting the method of distribution and management of digital data and applications over SIM-enabled mobile devices in accordance with a preferred embodiment of the present invention. At step 202, a mobile user using his/her mobile device (say mobile device 104) makes a request for service to mobile service provider 102. The request for service to mobile service provider 102 is made for providing services such as downloading of digital content. Downloaded contents include various data and applications such as scheduler, time manager, calculator, dictionary, games, images etc. One instance of such a request for service may relate to downloading of a particular MP3 song. Mobile service provider 102 responds by checking the settings and preferences of the mobile device of the mobile user. These settings and preferences of the mobile device and the

mobile user are stored in a repository of mobile service provider 102. The repository of mobile service provider 102 is explained in greater detail in conjunction with FIG.

3. An example of one setting for a mobile device user may be that he/she intends to receive only MP3 songs of a particular artist or genre. The subscriber defines his
5 preferences at the time of being activated for the service. These preferences can be modified later at any time.

At step 206, based on the services subscribed to by the user and by the preferences of the user, mobile service provider 102 sends a download descriptor to the mobile user. A download descriptor contains, among other information, a link or a
10 URL from which the requested digital content can be downloaded. The download descriptor is described later in greater detail in conjunction with FIG. 3. In case a mobile user has previously received the download descriptor and there is an update, the updated download descriptor is sent to the user. Such an updated download descriptor may have one or more updated information fields. Whenever the operator
15 introduces a new service, it is notified to the user based on his/her preferences through SMS containing the relevant download descriptor. The user may also specifically ask for new services.

In a preferred embodiment, the digital content is stored on the servers of content providers 110, 112 or 114. Alternatively, the content may also be stored on
20 the server of mobile service provider 102. The download descriptor may then be sent by mobile service provider 102 to the mobile user using a messaging service such as Short Messaging Service (SMS).

At step 208, the download descriptor, so received, is converted into a format that can be read by mobile devices 104, 106 and 108. The format of download
25 descriptor is described later in the description in conjunction with FIG. 4. In a preferred embodiment, the download descriptor is stored on "virtual vaults" on the SIM card of the mobile device. These "virtual vaults" are storage spaces (memory) on the SIM card that are created by SIM application toolkit in order to "vault" (store) download descriptors. Pointers to download descriptors are stored in SIM application
30 toolkit. Download descriptor can be invoked at any point of time for the purpose of reading as shown in step 210, downloading as shown in step 212, forwarding as shown in step 214, or deleting the link as shown in step 216. In case the mobile user

opts to download the content, the mobile user can download the content by invoking a browser as shown by step 218. The actual download gets initiated when the pointers to downloads are activated by the user. This activation may be done by various means, such as clicking the pointer. The browser invoked at this point can be any browser known in the prior art. For example, Wireless Application Protocol (WAP) phones have an in-built microbrowser; Pocket PC 2002 has Pocket Internet Explorer (IE) inbuilt into its Operating System (OS) and SIM Application Toolkit has the logic that launches the appropriate browser based on whether the device is WAP or HTML based. After the browser is invoked, the actual download of the digital content starts and the download is stored in a J2ME application space in the phone memory. Once a digital data or an application is downloaded, the user is prompted if he/she wants to delete the link from the "virtual vault".

The mobile user can also forward the download descriptor to a second user. This is done via a download server 302 provided by the mobile service provider 102 as indicated in step 220. Download server 302 is described in greater detail in conjunction with FIG. 3. Mobile service provider 102 preferably checks for the preferences of the second user to determine whether the download descriptor can be forwarded to the second user or not. If the preferences match, then the download descriptor is forwarded to the second user.

FIG. 3 illustrates the components of mobile service provider 102 in greater detail in accordance with a preferred embodiment of the present invention. Mobile service provider 102 comprises a download server 302 as shown in FIG.3. Download server 302 includes a repository 304, and a push module 314. Repository 304 preferably includes a profiles repository 306, a policies repository 308 and a "links to content" repository 310. Profiles of mobile users, who use/subscribe to the services of mobile service provider 102, are stored in profile repository 306. Profiles repository 306 includes preferences of the mobile users. The preferences indicate the type of services that are being used by the mobile users. For instance, the preferences may indicate if a mobile user wants to be updated regarding the newer versions of a game is available or if a mobile user wants to be notified for downloads only by friends (predefined mobile users). This data can be stored either in a directory or in a database all of which are known in the art. In a preferred

embodiment, this data is stored in a directory using Lightweight Directory Access Protocol (LDAP).

Repository 304 contains the licensing payment policies information in policies repository 308. Mobile service provider 102 and content providers 110, 112 and 114
5 define the licensing and payment policies. Other policies relating to services, network management, user policies are also stored in policies repository 308.

Repository 304 includes the links or URL of the content providers in the "links to content" repository 308. These links provide the address from which the digital content can be downloaded. Additionally, there is information regarding the title and
10 size of the digital content. The information related to the content gets updated depending on the change in the content.

Download server 302 also includes push module 314. Push module 314 updates the mobile users periodically regarding the change in content. Push module 314 is a messaging module, which sends the download descriptor (to a mobile
15 device) via an SMS. Push module 314 is activated whenever there is a change in content provided by the service provider. It also gets activated if the content provider withdraws the content. Push module 314 updates the links stored in "links to content" repository 310. Push module 314 also updates the mobile users regarding the change in content.

20 FIG. 4 illustrates the components of SIM-enabled mobile device in greater detail in accordance with a preferred embodiment of the present invention. Mobile user communicates with mobile service provider 102 through a SIM enabled mobile device. The mobile device can be any SIM-enabled mobile device, such as a mobile phone, PDA etc. A typical SIM enabled mobile device includes a SIM application
25 toolkit 402. As already mentioned, SIM application toolkit 402 is "pre-burnt" on the SIM card of the mobile device before it can be used by a mobile user in order to download digital content. SIM application toolkit 402 provides a standardized execution environment for applications stored on the SIM card. SIM application toolkit 402's specification is an ETSI (European Telecommunications Standards
30 Institute) – SMG (Special Mobile Group). ETSI – SMG is an international standard body that defines specification for SIM application toolkit 402. SIM application toolkit

402 is a platform independent application. This allows client (SIM toolkit application on the SIM) and download server 302 communication through SMS to be independent of the handset and the network. SIM application toolkit 402 receives the download descriptor via messaging services such as GSM SMS. The GSM SMS
5 messages contain User Data Header (UDH) and User Data Fields. UDH is an extension to GSM SMS to allow binary data to precede or replace the text message. The presence of UDH is indicated in the standard SMS header by setting the UDHI (user data header information) field. For instance, there is a chunk header (1 or N) for large SMS messages (beyond 160 characters). UDH and its applications are well
10 known in the art. The download descriptor is received using User Data Header field and is stored on SIM database using a virtual vault 404.

The download descriptor received on a mobile device may include information relating to the name and version of the content, URL from which the content can be downloaded, and the size of the content. The URL is provided in a format that can be
15 read by SIM application toolkit 402. Java Archive (JAR) format is one such format that can be read by SIM application toolkit 402. Download descriptor can be in various formats such as J2ME format. J2ME (Java 2 Platform, Micro Edition is a technology that allows programmers to use the Java programming language and related tools to develop programs for mobile devices). Java downloads has
20 specifications that allow the download and distribution of only java content An example of J2ME download descriptor is as follows:

Name – The name of the MIDlet; MIDlets are applications designed to run on wireless Java enabled devices

Version – The version number of the MIDlet

25 Description – The description of the MIDlet suite

JAR-URL – The URL from which the JAR file can be loaded

JAR-Size – The number of bytes in the JAR file

Data Size – The minimum number of bytes of persistent data required by the MIDlet.

Further, SIM application toolkit 402 provides an interface to the user for reading, forwarding, downloading and deleting download descriptor. The download descriptor stored in virtual vault 404 can be invoked at any point of time for the actual downloading, forwarding the descriptor to other mobile users, reading the information relating to the download descriptor, and deleting the download descriptor. The process of downloading involves automatic invocation of the browser for downloading of the content. As described earlier, automatic invocation of the browser is done through logic contained in SIM Application Toolkit 402. The download is then stored in the memory of the mobile device. Before a download, download server 302 will prompt the mobile user for the payment of the licensing fee for the download. If a mobile user forwards the download descriptor to a second mobile user, the information about the download content along with an identifier (such as identification name or identification number) for the second mobile user will be sent to download server 302 of mobile service provider 102. Download server 302 will check the preference and permissions of the addressed mobile user as described earlier. If the preferences of the addressed mobile user stored on repository 304 permits, then the download descriptor will be forwarded to the addressed (second) mobile user.

Download server 302 intermediates for payment and licensing as per the revenue sharing agreement between content providers and mobile service provider 102. The user is prompted for payment and Digital rights object (which is explained below) is pushed to the mobile user. If mobile user wants to delete the download descriptor, the delete function will delete the entry from the SIM database. SIM application toolkit 402 also provides for the modification prompt. The modification prompt will inform the mobile users, in case a download descriptor stored in the SIM database using virtual vault 404 is modified. Download server 302 updates virtual vault 404 in case the content provided by content provider changes or if the service for the same is withdrawn.

A Digital rights object contains the permissions for the digital content that it is associated with. For Example, a digital object containing rights for a new MP3 song can look like:

<rights>

```

    <agreement>

        <asset>

            <user id>mid:zzz@domain.com<uid>

        </asset>

5      <permission>

        <play>

            <count> 1 </count>

        </play>

        </permission>

10     </agreement>

    </rights>

```

In the above example, the MP3 song for the user zzz@domain.com can be played only once. If the user wants to listen to it again, he/she will have to buy the content.

15 A preferred embodiment of the present invention supports the feature that the link can be forwarded and distributed by a mobile user to other mobile users. For instance, once a mobile user has received a URL or link, the URL can be forwarded to a second mobile user. Forwarding takes place through download server 302. The second mobile user can download the content only if the first mobile user accepts

20 the licensing and payment requirements. Licensing is done to prevent the downloaded content from being illegally forwarded by one mobile user to another mobile user. This concept is explained more clearly in conjunction with FIG. 5.

FIG. 5 shows a block diagram in accordance with a preferred embodiment of the present invention. In order to ensure that licensing and payment is done before

25 some content is downloaded, download server 302 checks the preferences of a mobile user and also prompts the mobile user regarding the payment of licensing fee

for the download. A mobile user may forward the download descriptor to a second mobile user. To achieve this the first mobile user sends an identifier (such as an identification number) of the second mobile user and the download descriptor information to download server 302. As shown by block 502, download server 302
5 intermediates for payment and licensing. The digital rights object is also pushed to the second mobile user.

As is evident from above, the present invention enables the provision of content to mobile users only upon payment of the necessary fees. Further, SIM application toolkit 402 is platform independent. Hence it can be installed on any kind
10 of handset. For instance, SIM application toolkit 402 will work equally well on a Nokia handset as well as a Motorola handset. SIM application toolkit 402 also allows for the storage of download descriptor in virtual vault 404. Also, the invention provides for periodic updates regarding the services. For instance, suppose a mobile user sends request for downloading of a game. Mobile service provider 102 will update the
15 mobile user regarding the newer versions of the game that are provided by the content providers. These updates will be sent to subscribed mobile users through SMS periodically

While the preferred embodiments of the invention have been illustrated and described, it will be clear that the invention is not limited to these embodiments only.
20 Numerous modifications, changes, variations, substitutions and equivalents will be apparent to those skilled in the art without departing from the spirit and scope of the invention as described in the claims.

What is claimed is:

1. A method of distribution of digital content amongst a plurality of mobile devices and at least one mobile service provider, each mobile device being connected to at least one mobile service provider, the method comprising the steps of:

a. sending a request for services from the mobile device to the mobile service provider, the services including provision of digital content to a plurality of mobile devices;

b. sending a download descriptor from the mobile service provider to the mobile device depending on user preferences, the download descriptor including information relating to the requested services;

c. storing the download descriptor on the mobile device, and

d. processing the information in the download descriptor using a user interface, the step of processing comprising forwarding the data in the download descriptor to a second mobile device through the mobile service provider, the data being forwarded based on the preferences of the second mobile device.

2. The method as recited in claim 1 wherein the step of mobile device sending a request for services to the mobile service provider comprises the mobile device sending a message to the mobile service provider.

3. The method as recited in claim 1 wherein the step of mobile service provider sending a download descriptor to the mobile device depending on user preferences comprises:

a. detecting an update in content available through the mobile service provider;

- b. identifying the mobile devices that have to be notified regarding the update in content, the identification being done on the basis of user preferences ;
 - c. the mobile service provider generating the download descriptor that is to be sent to the identified mobile device, and
 - d. sending the generated download descriptor to the identified mobile device through messaging services.
4. The method as recited in claim 1 wherein the step of storing the download descriptor on the mobile device comprises:
- a. giving a user of the mobile device an option of storing the download descriptor in the mobile device using a virtual vault, and
 - b. storing the download descriptor on a SIM card.
5. The method as recited in claim 1 wherein the step of processing the data in the download descriptor using a user interface further comprises reading the contents of the download descriptor.
6. The method as recited in claim 1 wherein the step of processing the data in the download descriptor using a user interface further comprises downloading the content
7. The method as recited in claim 1 wherein the step of processing the data in the download descriptor using a user interface comprises downloading the content stored at a URL provided by the download descriptor.
8. The method as recited in claim 1 wherein the step of processing the data in the download descriptor using a user interface comprises deleting the download descriptor stored in a SIM card.

9. The method as recited in claim 1 wherein the step of processing the data in the download descriptor using a user interface comprises providing a modification prompt to inform the user in case a descriptor already stored in the SIM card is received or modified.

5 10. The method as recited in claim 7 wherein the step of downloading the content comprises the steps of:

- a. invoking a browser to download content, and
- b. providing the URL name as the parameter for the download.

10 11. A system suitable for distribution of digital content in accordance with licensing, copyright and digital rights management policies, the system comprising:

- a. at least one mobile device, the mobile device further comprising:
 - i. a SIM card for identification of the mobile device;
 - ii. a SIM application toolkit for enabling the mobile device for the
15 service, and
 - iii. means for storing a download descriptor, the storing means being simulated on the SIM card by the SIM application toolkit..
- b. at least one mobile service provider for providing mobile communication services to the mobile device, the mobile service
20 provider further comprising:
 - i. a database for storing data related to the service;
 - ii. means for managing payment and digital rights intermediation during download; and
 - iii. a push module for intimating a user about content updates;

- c. at least one content provider to provide for the necessary contents being provided by the service.

12. The system as recited in claim 11 wherein the database for storing data related to the service further comprises:

- 5 a. a user database for storing user profiles and preferences on the mobile service provider;
- b. a database for storing policies determining the licensing, distribution and management of service, and
- c. a database storing links to content available for download.

10 13. The system as recited in claim 11 wherein the means for managing payment and digital rights intermediation during download further comprises a means for prompting a user for payments.

14. A system suitable for distribution of digital content amongst a plurality of mobile devices and at least one mobile service provider, each mobile device
15 being connected to at least one mobile service provider, the system comprising:

- a. an service-enabling module for enabling the service on the mobile device, the service-enabling module being present on the mobile device;
- 20 b. a push module for informing a user about content updates, the push module being present on the mobile service provider;
- c. a plurality of databases for storing data related to the service, the databases being present on the mobile service provider, the databases further comprising:

- i. a user database for storing user profiles and preferences on the mobile service provider;
 - ii. a database for storing policies determining the licensing, distribution and management of service, and
 - 5 iii. a database storing links to content available for download;
 - d. a download descriptor being provided on the mobile device for intimating the user of the updated content, and
 - e. a module for generating the download descriptor, the module being provided on the mobile service provider.
- 10 15. The system as recited in claim 14 wherein the download descriptor further comprises:
- a. the name of the content;
 - b. the version number of the content;
 - c. the description of the content;
 - 15 d. the link from which the content can be downloaded, and
 - e. the number of bytes in the content to be downloaded.

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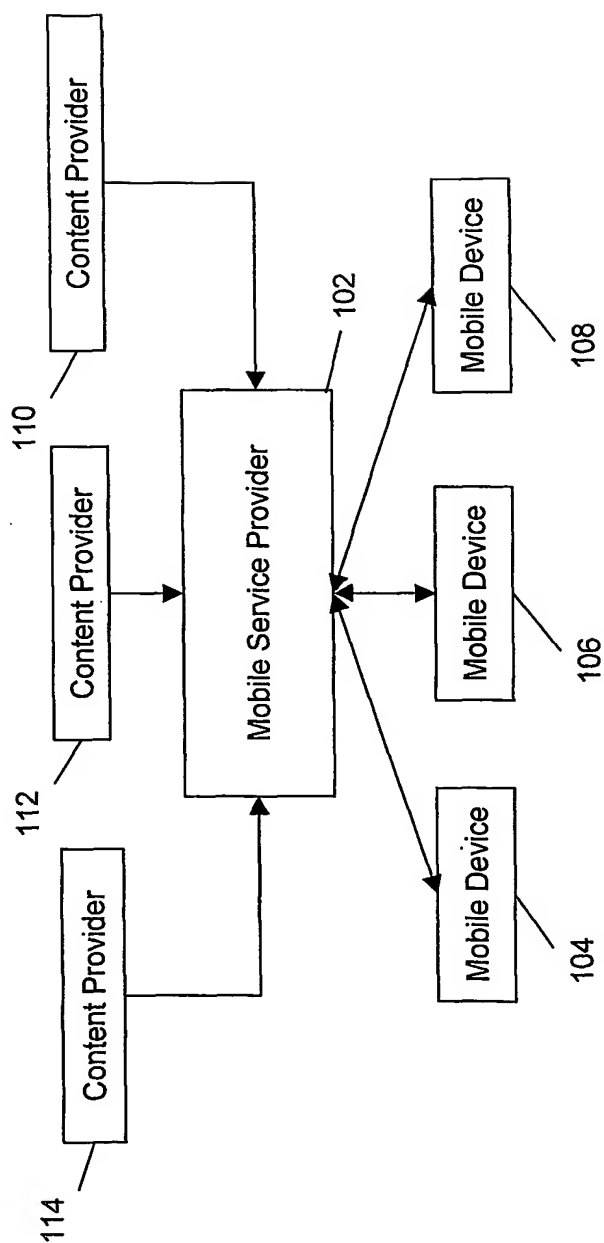


FIG. 1

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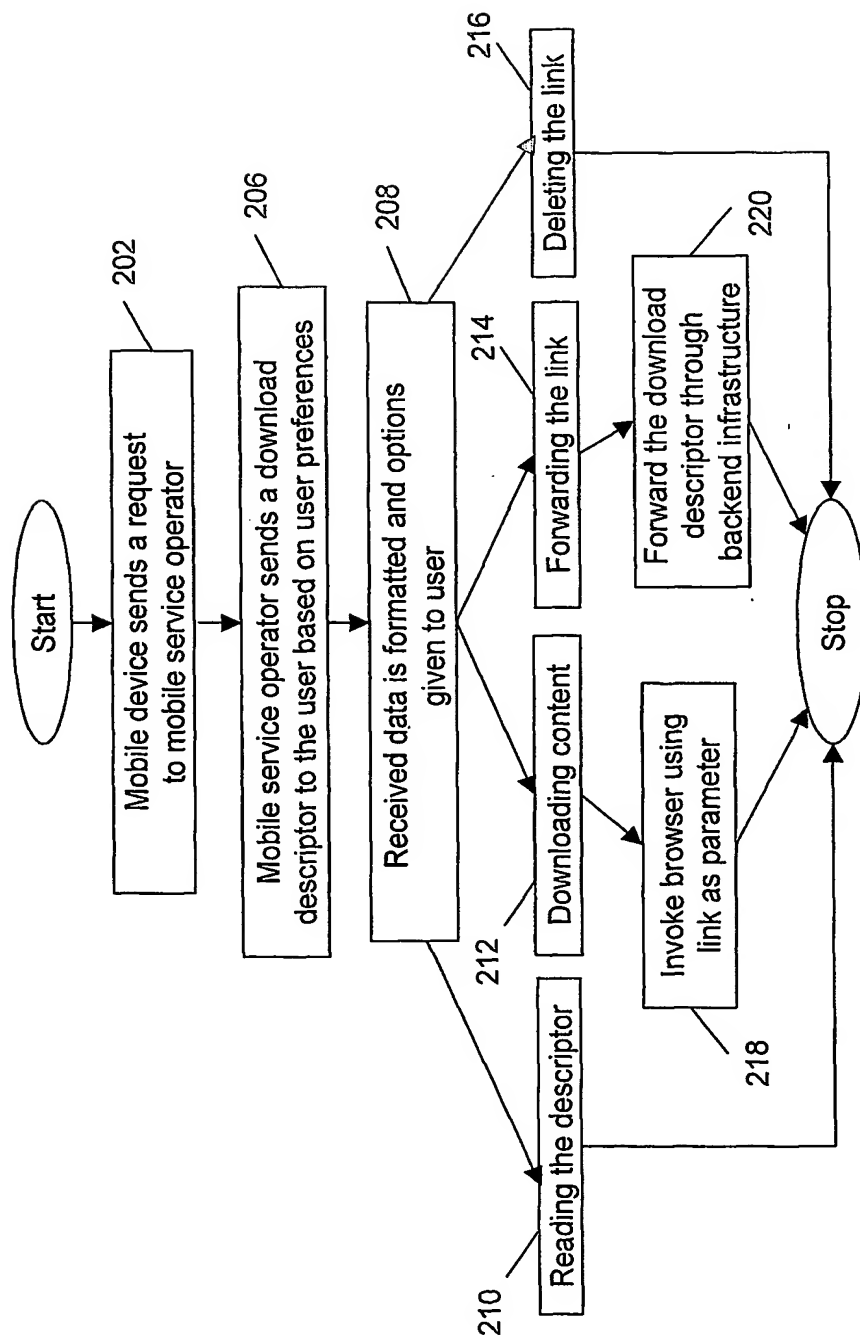


FIG. 2

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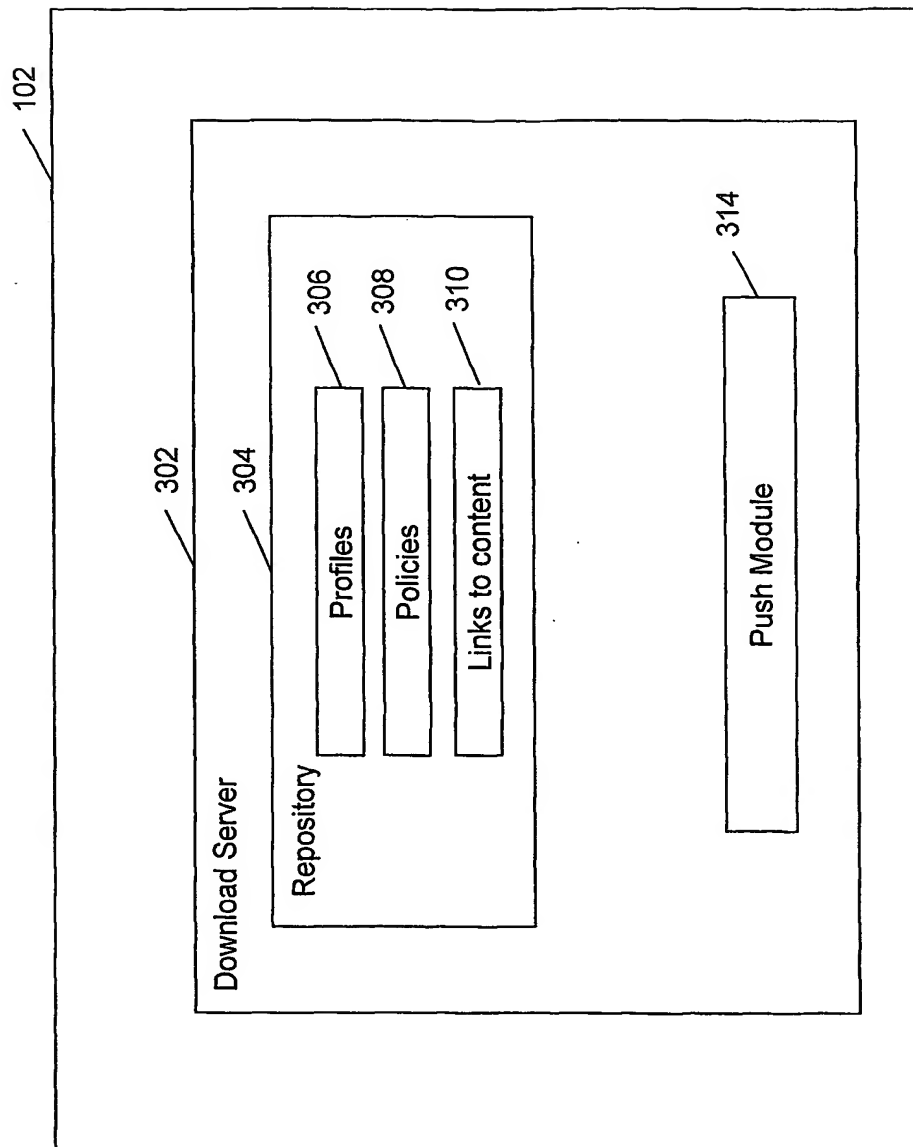


FIG. 3

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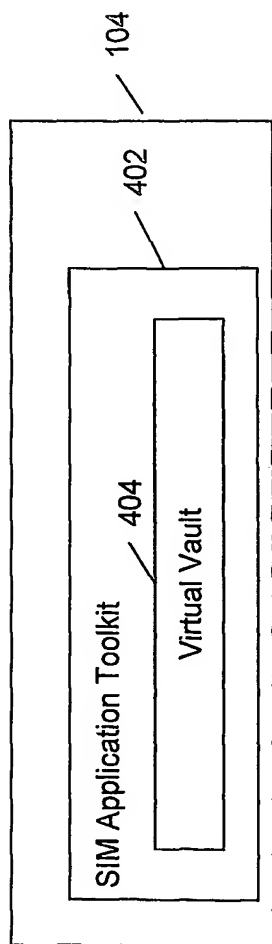


FIG. 4

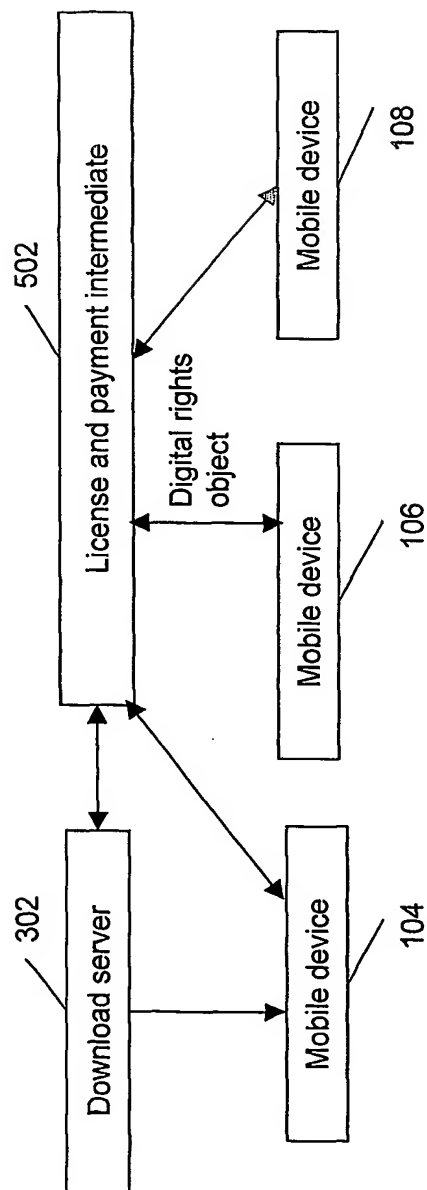


FIG. 5

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